

REMARKS/ARGUMENTS**Status of Claims**

Claims 1-28 are pending in the application and stand rejected. Claim 9 is objected to. Applicant has canceled Claims 18-20, and has amended Claims 1, 9, 15, 21 and 25, leaving Claims 1-17 and 21-28 for consideration upon entry of the present Amendment.

Applicant respectfully submits that the rejections under 35 U.S.C. §101, 35 U.S.C. §102(b), and 35 U.S.C. §103(a), have been traversed, that no new matter has been entered, and that the application is in condition for allowance.

Objections to the Specification

The disclosure is objected to because the Examiner alleges there appears to be minor mistakes: 'breath' instead of 'breathe' on page 3, paragraphs 7-8; extraneous 'x-ray beam 14' page 14, paragraph 28 line 6; 'include' instead of 'includes' on page 8, paragraph 30, line 11; "coached" instead of 'couched' on page 9, paragraph 34, line 2; 'disclosed' instead of 'discloses' on page 10, paragraph 35, line 5; 'phases' instead of 'phase' on page 12, paragraph 38, line 4; use of 'cine' is confusing, Examiner assumes 'sine' for purposes of examination; and 'may' instead of 'my' on page 14, paragraph 42, line 7. Appropriate correction is required. Paper 2, page 2.

Applicant thanks the Examiner for the thorough reading of the specification, and has made the following corrections as suggested by the Examiner: 'breath' instead of 'breathe' on page 3, paragraphs 7-8; extraneous 'x-ray beam 14' page 14, paragraph 28 line 6; 'include' instead of 'includes' on page 8, paragraph 30, line 11; "coached" instead of 'couched' on page 9, paragraph 34, line 2; 'disclosed' instead of 'discloses' on page 10, paragraph 35, line 5; 'phases' instead of 'phase' on page 12, paragraph 38, line 4; and, 'may' instead of 'my' on page 14, paragraph 42, line 7. Accordingly, Applicant respectfully requests reconsideration and withdrawal of these objections.

Regarding the use of "cine", which the Examiner comments is confusing, Applicant respectfully submits that "cine" is used in the specification in a manner that would be readily recognizable to one skilled in the art. For example, at paragraph [0042], Applicant uses the phrase "cine acquisition mode", which is recognized in the art to mean an acquisition mode where the operator sets up the number of images to be acquired and the rate. Applicant believes subsequent uses of the term "cine" are consistent with this introductory usage. Accordingly, Applicant submits that "cine" is used in a manner that would be known and

understood by one skilled in the art, and is used in a consistent manner, and therefore respectfully requests reconsideration and withdrawal of this objection.

Claim Rejections Under 35 U.S.C. §101

Claims 9-14 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 18-20 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Applicant traverses these rejections for the following reasons.

Regarding Claims 9-14

Applicant has amended Claim 9 to no longer be directed to non-statutory subject matter. Dependent claims inherit all of the limitations of the parent claim.

Regarding Claims 18-20

Applicant has canceled Claims 18-20, without prejudice.

In view of the foregoing, Applicant respectfully requests reconsideration and withdrawal of this rejection as it applies to the non-canceled claims.

Claim Objections

Claim 9 is objected to because the following phrase: 'so as to be communicated with said imaging system' is considered confusing by the Examiner, and that for purposes of examination the Examiner assumes "communicated" to mean "scanned".

Applicant appreciates the Examiner's observations and has amended the Claims accordingly to address the Examiner's concerns. In view thereof, Applicant respectfully requests reconsideration and withdrawal of this objection.

Claim Rejections Under 35 U.S.C. §102(a)

Claims 1-17 and 21-28 stand rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Varian Medical Systems (<http://web.archive.org/web/20010304174429/http://www.varian.com/onc/Drd057.html>), hereinafter Varian.

Applicants respectfully traverses this rejection for the following reasons.

Applicant respectfully submits that "[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, *in a single prior art reference.*" *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987) (Emphasis added). Moreover, "[t]he identical

invention must be shown in as complete detail as is contained in the *** claim." Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). Furthermore, the single source must disclose all of the claimed elements "arranged as in the claim." Structural Rubber Prods. Co. v. Park Rubber Co., 749 F.2d 707, 716, 223 U.S.P.Q. 1264, 1271 (Fed. Cir. 1984) (Emphasis added). Missing elements may not be supplied by the knowledge of one skilled in the art or the disclosure of another reference. Titanium Metals Corp. v. Banner, 778 F.2d 775, 780, 227 U.S.P.Q. 773, 777 (Fed. Cir. 1985).

Regarding independent Claims 1, 9, 15 and 21

Applicant has amended independent Claims 1, 9, 15 and 21, to now recite, inter alia:

"...computing a desired image acquisition time *having a duration greater than the duration of one breathing cycle of the patient...*"

No new matter has been added as antecedent support may be found in the specification as originally filed, such as at Paragraphs [0045-0046] for example.

Dependent claims inherit all of the limitations of the respective parent claim.

In comparing Varian with the claimed invention, Applicant finds Varian to disclose "By correlating this data with the motion of the tumor in simulation, you can create a treatment plant that gates the treatment beam on *only when the tumor falls within* the planned beam aperture." Varian, page 2, first full paragraph (emphasis added).

Here, Applicant finds Varian to disclose gating of the treatment beam, but is silent on computing a desired image acquisition time having a duration greater than the duration of one breathing cycle of the patient. If the Examiner considers the Varian treatment beam time to be synonymous with the claimed image acquisition time, then Applicant submits that Varian necessarily does not disclose the claimed invention because the Varian treatment beam appears to be on for less than one breathing cycle of the patient (see Varian, page 2, first full paragraph). If the Examiner considers some other characteristic of Varian to be synonymous with the claimed image acquisition time, then Applicant respectfully requests the Examiner to more specifically point out where Varian discloses each and every element *arranged as claimed*.

Regarding Claims 24-28

Notwithstanding the amendment to Claim 25, which Applicant amends to be more descriptive of the subject matter regarded as the invention, Applicant respectfully submits that the Examiner has made a broad sweeping anticipation rejection of Claims 24-28 without stating with specificity where Varian discloses each and every element of the claimed invention *arranged as claimed*.

For example, Claim 24, inter alia, recites:

"A method *for assigning phases* in images acquired using an imaging system comprising: ...

processing *said image data and said system data to determine a phase* of said image data..."

Applicant finds Varian to be absent any disclosure of a method for assigning phases that includes processing image data and system data to determine a phase of the image data, and respectfully submits that the Examiner has not stated with specificity where such disclosure may be found.

Claim 25 recites, inter alia:

'...determining *a reference point* in said system data;

establishing said reference point as *a zero phase pulse*;

assigning a phase of zero to an ith reference point of said system data and assigning a phase of 2π for a subsequent reference point; and

wherein said synchronizing includes *selecting images with correlating phases*."

Applicant finds Varian to be absent disclosure of each and every element of the claimed invention arranged as claimed, and respectfully submits that the Examiner has not stated with specificity where such disclosure may be found.

Claim 28 recites, inter alia:

"...applying *a wrap around technique* to adjust said phase *if said reference point occurs while said imaging system is not imaging*."

Applicant finds Varian to be absent disclosure of each and every element of the claimed invention arranged as claimed, and respectfully submits that the Examiner has not stated with specificity where such disclosure may be found.

Absent anticipatory disclosure of each and every element arranged as claimed, Varian cannot be anticipatory. Furthermore, by alleging anticipation through a broad sweeping rejection absent specific reference to anticipatory elements that may be found in Varian, Applicant respectfully submits that the Examiner has failed to properly meet the burden of a showing of anticipation.

In view of the foregoing, Applicant submits that Varian does not disclose each and every element of the claimed invention arranged as claimed and therefore cannot be anticipatory. Accordingly, Applicant respectfully submits that the Examiner's rejection

under 35 U.S.C. §102(b) has been traversed, and requests that the Examiner reconsider and withdraw of this rejection.

Claim Rejections Under 35 U.S.C. §103(a)

Claims 2, 5, 10, 16, 22 and 25 stand rejected under U.S.C. 103(a) as being unpatentable over Varian in view of EP 1090586, hereinafter EP'586.

Claims 8, 17 and 23 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Varian in view of BettyAnn Chodkowski, http://godzilla.kennedykrieger.org/bettyann/msThesis/msO6Q_thesis/msO6Q_20bkg.html, hereinafter Chodkowski.

Applicant traverses these rejections for the following reasons.

Applicant respectfully submits that the obviousness rejection based on the References is improper as the References fail to teach or suggest *each and every element* of the instant invention in such a manner as to *perform as the claimed invention performs*. For an obviousness rejection to be proper, the Examiner must meet the burden of establishing a prima facie case of obviousness. In re Fine, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988). The Examiner must meet the burden of establishing that all elements of the invention are taught or suggested in the prior art. MPEP §2143.03.

All claims rejected under U.S.C. §103(a) are dependent claims that inherit all of the limitations of the respective parent claim.

At least for the reasons set forth above, Applicant submits that Claims 2, 5, 8, 10, 16, 17, 22, 23 and 25, are patentable as Varian fails to teach each and every element of the claimed invention arranged as claimed, and Applicant submits that both EP'586 and Chodkowski fail to cure the deficiencies of Varian.

Regarding Claims 5, 16 and 22 More Specifically

Claims 5, 16 and 22 recite, inter alia:

"...[said operating includes]/[said means for operating including means for] establishing an acquisition time for said image data corresponding to *a physiological cycle plus at least one of two thirds of a gantry rotation time and one gantry rotation time.*"

At Paragraphs [0045-0046], Applicant discusses that the claimed acquisition time has the advantage of allowing images to be registered *without respiratory gating*.

In combining Varian with EP'586, the Examiner combines one reference (Varian) that *teaches respiratory gating*, with another reference (EP'586) that teaches asynchronous imaging. By making such a combination, one skilled in the art is necessarily taught to

include respiratory gating, which is *exactly opposite* to the advantage of the claimed invention (the advantage of *no respiratory gating*). Accordingly, one skilled in the art would not be motivated to arrive at the claimed invention by combining Varian with EP'586.

Furthermore, Applicant respectfully submits that neither reference teaches a specific acquisition time as being *the sum of* a physiological cycle *and* a defined gantry rotation time, which is specifically claimed for in the instant invention. Accordingly, one skilled in the art would not be motivated to arrive at the claimed invention, where each and every element must be disclosed and must perform as the claimed invention performs, by looking to the combination of Varian and EP'586.

Regarding Claim 25 More Specifically

Amended Claim 25 recites, inter alia:

“...determining *a reference point* in said system data;
establishing *said reference point as a zero phase pulse*;
assigning a phase of zero to an i th reference point of said system data and assigning a phase of 2π for a subsequent reference point; and
wherein *said synchronizing includes selecting images with correlating phases*.”

In alleging obviousness, the Examiner makes a broad sweeping statement that “EP 1090586 does teach” the claimed elements to cure the deficiency of Varian. Paper 2, page 8. However, the Examiner does not cite a single reference in EP'586 to support this allegation. Instead, the Examiner remarks that one skilled in the art would be motivated to combine EP'586 with Varian to arrive at the claimed invention “in order to better register breathing cycle”, making reference to EP'586, Paragraph 28.

Applicant respectfully disagrees that EP'586 Paragraph 28 motivates one skilled in the art to do what Applicant has done.

At Paragraph 28, Applicant finds EP'586 to teach chronologically discontinuous segments of a projection that are acquired in sequential order in one embodiment, and to teach shuffled segments of a projection that are acquired nonsequentially in another embodiment, and does not find any teaching or motivation to arrive at the claimed invention that performs as the claimed invention performs. Nowhere does the Examiner show, and nowhere does Applicant find, determining *a reference point* in said system data; establishing *said reference point as a zero phase pulse*; *assigning a phase of zero to an i th reference point of said system data and assigning a phase of 2π for a subsequent reference point*; and wherein *said synchronizing includes selecting images with correlating phases*, which are specifically claimed for in the instant invention.

Accordingly, Applicant respectfully submits that absent a teaching or motivation to arrive at the claimed invention that performs as the claimed invention performs, a prima facie case of obviousness cannot be established.

In view of the foregoing, Applicant submits that the References fail to teach or suggest each and every element of the claimed invention and are therefore wholly inadequate in their teaching of the claimed invention as a whole, fail to motivate one skilled in the art to do what the patent Applicant has done, fail to offer any reasonable expectation of success in combining the References to perform as the claimed invention performs, and discloses a substantially different invention from the claimed invention, and therefore cannot properly be used to establish a prima facie case of obviousness. Accordingly, Applicant respectfully requests reconsideration and withdrawal of all rejections under 35 U.S.C. §103(a), which Applicant considers to be traversed.

In light of the foregoing, Applicant respectfully submits that the Examiner's rejections under 35 U.S.C. §101, 35 U.S.C. §102(b) and 35 U.S.C. §103(a), have been traversed, and respectfully request that the Examiner reconsider and withdraw these rejections.

The Commissioner is hereby authorized to charge any additional fees that may be required for this amendment, or credit any overpayment, to Deposit Account No. 07-0845.

In the event that an extension of time is required, or may be required in addition to that requested in a petition for extension of time, the Commissioner is requested to grant a petition for that extension of time that is required to make this response timely and is hereby authorized to charge any fee for such an extension of time or credit any overpayment for an extension of time to the above identified Deposit Account.

Respectfully submitted,

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